CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO.
FOR
BIOSOLIDS RECYCLING, INC.
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ALAMEDA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring biosolids and biosolids land application areas. This MRP is issued pursuant to Water Code Section 13267. The Dischargers shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Specific sampling locations shall be approved by Regional Board staff prior to implementation of sampling activities.

All samples shall be representative of the volume and nature of the material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. Field test instruments (such as those used to measure pH and electrical conductivity) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

BIOSOLIDS MONITORING

Biosolids from each generator shall be sampled and analyzed as follows. Results for all chemical constituents shall be reported in mg/Kg on a dry weight basis. Composite samples may be used in lieu of grab samples if all required sample holding times are met.

For Generators Using Continuous Sludge Wasting and Disposal and for Pond Cleaning Projects:

		Sampling Schedule		
Constituent(s)	Sample Type	Small Generator [1]	Large Generator [2]	Reporting Frequency
Metals (total) [3]	Grab	1 per six months	1 per 200 dry tons; minimum of 1 per month	Monthly [6]
PCB arochlors, aldrin, dieldrin [4]	Grab	1 per six months	1 per 500 dry tons; minimum of 1 per six months	Monthly [6]
Semi-volatile organics [5]	Grab	1 per six months	1 per 500 dry tons; minimum of 1 per six months	Monthly [6]
Percent moisture	Grab	1 per quarter	1 per 200 dry tons; minimum of 1 per month	Monthly [6]

		Sampling Schedule		
Constituent(s)	Sample Type	Small Generator [1]	Large Generator [2]	Reporting Frequency
Total nitrogen	Grab	1 per quarter	1 per 200 dry tons; minimum of 1 per month	Monthly [6]
Ammonia nitrogen	Grab	1 per quarter	1 per 200 dry tons; minimum of 1 per month	Monthly [6]
Nitrate nitrogen	Grab	1 per quarter	1 per 200 tons; minimum of 1 per month	Monthly [6]
Total phosphorus	Grab	1 per quarter	1 per 200 tons; minimum of 1 per month	Monthly [6]
Total potassium	Grab	1 per quarter	1 per 200 tons; minimum of 1 per month	Monthly [6]

[1] Small generators are those that generate and/or land apply less than 350 dry tons per year (either during a cleanout project or by continuous wasting and disposal).
[2] Large generators are all others.
[3] Include at least the following metals: arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc.
[4] Using SW 846 Method 8080.
[5] Using EPA Method 8270.
[6] Include analytical data in the monthly monitoring report for the month in which monitoring occurred. For months in which no monitoring takes place, the Monthly Monitoring Report shall so state.

If, for a particular biosolids generator, it can be demonstrated that the generator's biosolids exhibit consistent chemical character over a period of at least two years, the applicable sampling schedule may be reduced by one-half upon written approval of a Biosolids Monitoring Data Summary Report. The report shall contain tabulated analytical data summaries for all biosolids monitoring data for the previous three years.

For Generators with Stockpile Disposal Projects:

Constituent(s)	Sample Type	Number of Samples
Metals (total)	Composite	1 per 200 dry tons; minimum of 1 per month
PCB arochlors, aldrin, dieldrin	Composite	1 per 500 dry tons; minimum of 1 per six months
Semi-volatile organics	Composite	1 per 500 dry tons; minimum of 1 per six months
Percent moisture	Composite	1 per 200 dry tons; minimum of 1 per month
Total nitrogen	Composite	1 per 200 dry tons; minimum of 1 per month
Ammonia nitrogen	Composite	1 per 200 dry tons; minimum of 1 per month
Nitrate nitrogen	Composite	1 per 200 tons; minimum of 1 per month

Constituent(s)	Sample Type	Number of Samples
Total phosphorus	Composite	1 per 200 tons; minimum of 1 per month
Total potassium	Composite	1 per 200 tons; minimum of 1 per month

The analytical data shall be presented in the monthly monitoring report(s) for the month(s) in which application of the biosolids occurs. For months in which no application takes place, the Monthly Monitoring Report shall so state.

ROUTINE FIELD MONITORING

The Dischargers shall establish and implement an inspection and application oversight program to monitor and control biosolids application rates and ensure compliance with the WDRs. Each discrete application field shall be managed and monitored as follows:

1. Pre-application Oversight:
   a. Identify generator(s) whose biosolids are to be applied.
   b. Define crop to be planted.
   c. Calculate allowable loading rate based on soil nitrogen residual data from the previous fall and most recent plant available nitrogen (PAN) and moisture content data for the generator(s)' biosolids.
   d. Document communication of allowable loading rates to spreader operator.

2. Pre-application Inspection:
   a. Verify that setbacks are clearly delineated.
   b. Verify that runoff controls are in place and functional.
   c. Verify that culverts are blocked (where applicable).

3. Application Oversight:
   a. Verify compliance with setbacks and allowable loading rate.
   b. Verify compliance with soil incorporation requirements.

4. Post-application Oversight:
   a. Confirm with irrigation manager requirements to control runoff for the specified period after application.
   b. Calculate actual biosolids and PAN loading rates.
   c. Note anticipated dates of planting, irrigation, and harvest.

POST-APPLICATION SOIL MONITORING

The Dischargers shall sample soil during the fourth quarter of each year as follows: two background sampling locations outside of the land application areas and six sampling locations within each discrete

drainage area identified in the Waste Discharge Requirements that has received biosolids in the last 12 calendar months (not to exceed one sample per 20 acres). Sampling locations shall be distributed to be representative of each subarea and predominant soil type. Soil samples shall be collected from each sampling location at the following depth intervals: 0 to 1 foot and 2 to 3 feet below the ground surface. Each 12-inch sample shall be thoroughly mixed to create a composite sample representative of the depth interval, and shall be analyzed as follows:

Constituent/Parameter	**Units**	Sampling and Reporting Frequency [3]
Soil Classification (USCS and USDA)	--	Annually
PH	Std. units	Annually
Total Solids	% total weight	Annually
Total Alkalinity [1]	mg/Kg as $CaCO_3$	Annually
Cation Exchange Capacity [1]	meq/100 grams	Annually
Electrical Conductivity	mg/Kg, mg/L	Annually
Nitrate nitrogen	mg/Kg	Annually
Total Kjeldahl nitrogen	mg/Kg	Annually
Chloride [2]	mg/L	Annually
Metals [2, 4]	mg/L	Annually

1 To be reported on a dry weight basis; show calculations.

2 Analysis shall be performed on the extract obtained from the Waste Extraction Test using distilled water as the extractant.

3 Samples shall be collected in the fall (fourth quarter). Sampling must occur at the same time each year.

4 Include at least the following metals: arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, iron, and manganese.

SURFACE WATER MONITORING

Beginning upon adoption of this Order, the Dischargers shall sample each surface water sampling location depicted on Attachment B (R-1 through R-4, inclusive) once per month between 1 October and 30 May when water is present in the channels. Storm water monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
pH	std.	Grab	Monthly
Total dissolved solids	mg/L	Grab	Monthly
BOD	mg/L	Grab	Monthly
Nitrate nitrogen	mg/L	Grab	Monthly

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
Ammonia nitrogen	mg/L	Grab	Monthly
Selected minerals [1]	mg/L	Grab	Monthly
Metals [2]	ug/L	Grab	Monthly

[1] Selected minerals shall include, at a minimum, the following: chloride, iron, manganese, and sodium.

[2] Metals shall include arsenic, cadmium, copper, lead, mercury, nickel, and zinc.

GROUNDWATER MONITORING

If required pursuant to completion of the report specified in Provision G.1.c, the Dischargers shall implement the following groundwater monitoring program for all monitoring wells beginning with the fourth quarter 2007. Prior to construction of any groundwater monitoring wells, the Dischargers shall submit a Groundwater Monitoring Well Installation Workplan to the Regional Board for review and approval. Once installed, all new wells shall be added to the MRP, and all wells shall be sampled and analyzed according to the schedule below.

Prior to purging, groundwater elevations shall be measured, and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized prior to sampling. Depth to groundwater shall be measured to the nearest 0.01 feet. Water table elevations shall be calculated and used to determine groundwater gradient and direction of flow. Samples shall be collected using approved EPA methods. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling and Reporting Frequency[5]
Depth to groundwater	0.01 feet	Measurement	Quarterly
Groundwater elevation [1]	0.01 Feet	Calculated	Quarterly
Gradient magnitude	feet/feet	Calculated	Quarterly
Gradient direction	Degrees	Calculated	Quarterly
pH	std.	Grab	Quarterly
Total dissolved solids	mg/L	Grab	Quarterly
Nitrate nitrogen	mg/L	Grab	Quarterly
Ammonia nitrogen	mg/L	Grab	Quarterly
Total coliform organisms [2]	MPN/100 ml	Grab	Quarterly
Standard minerals [3]	mg/L	Grab	Annually
Metals [4]	ug/L	Grab	Annually

[1] Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.

[2] Using a minimum of 15 tubes or three dilutions.

[3] Standard Minerals shall include, at a minimum, the following elements/compounds: calcium, chloride, iron, magnesium, manganese, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness.

[4] Metals shall include arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc.

[5] Beginning with the fourth quarter 2007.

REPORTING

In reporting monitoring data, the Dischargers shall arrange the data in tabular form using the format provided in the example tables, which are part of this MRP, or in another approved format so that the date, sample type (e.g., biosolids, soil, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed and stamped by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board on the **1st day of the second month following the end of the monitoring period** (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. A scaled site map depicting each discrete field, proprety boundaries, roads, on-site structures, surface water bodies, drainage features, and runoff controls (as applicable);
2. The results of biosolids monitoring for each generator whose waste was applied to land during the month. Specifically, tabulated data for each generator shall be provided using the attached Biosolids Monitoring Results form (or approved revision thereof). Laboratory analytical reports need not be included, but must be provided upon request.
3. The results of routine field monitoring. Specifically, tabulated information for each discrete application field used during the month shall be provided using the attached Field Monitoring Results form (or approved revision thereof).
4. Daily precipitation, monthly total precipitation, and cumulative precipitation to date (between 1 October and 30 June only). Precipitation data shall be obtained from the Altamont Pass weather station or other approved on-site or off-site precipitation monitoring site.
5. The results of surface water monitoring if water was present at the surface water sampling locations. If water was not present, the monitoring report shall so state.
6. Whether water was present in the storm water detention ponds and, if so, the freeboard in each pond on the last day of the month.
7. If water from the storm water retention ponds was applied to land, report the areas where it was applied and the corresponding dates of application. Specify which ponds, if any, for which the 30-day retention requirement has been satisfied and the method of subsequent storm water release from the associated drainage area (e.g., pond bypass or discharge through the pond).

8. For each biosolids generator and discrete application field, a comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements.
9. If no biosolids were applied during the month, a letter report certifying that fact shall be submitted.

B. Quarterly Monitoring Reports

If required pursuant to completion of the report specified in Provision G.1.c, the Dischargers shall establish a quarterly sampling schedule for groundwater such that samples are obtained approximately every three months. Quarterly reporting shall begin with the fourth quarter 2007. Quarterly monitoring reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by May 1st). The Quarterly Report shall include the following:

1. Results of groundwater monitoring. The results of regular monthly monitoring reports for March, June, September and December may be incorporated into their corresponding quarterly monitoring report;
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any;
4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal tends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
5. A comparison of the monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
6. Summary data tables of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
8. Copies of laboratory analytical report(s) for groundwater samples.

C. Annual Report

An Annual Report shall be prepared and submitted to the Regional Board by **1 February** each year. The Annual Report shall include the following:

1. The monthly monitoring report for the last month of the calendar year.

2. For each biosolids generator, a summary of all analytical data and verification of compliance with the biosolids monitoring requirements. Include all Biosolids Monitoring Results forms.
3. For each discrete application field, a chronological log of dates of biosolids application, irrigation, precipitation, and runoff control operations. Specifically, tabulated information for each discrete application field shall be provided using the attached Field Activities Summary form (or approved revision thereof).
4. For each discrete application field:
    a. Total cumulative metals loading rates as of the end of the previous calendar year;
    b. Calculation of the total metals and nitrogen loading rates for the year;
    c. The cumulative metals loading rates since biosolids land application began; and
    d. The cumulative metals loading rates to date as a percentage of the cumulative metals loading limits.
5. A report of soil monitoring, including:
    a. Sampling and analysis activities, including a scaled map of sampling locations;
    b. Tabulation of all soil analytical results;
    c. Historical time vs. concentration plots for each constituent at each sampling interval;
    d. A discussion of any observed spatial or temporal variation; and
    e. Whether pH adjustment is needed and, if so, how and when the adjustment will be made.
6. A surface water monitoring summary report, including:
    a. Tabular and graphical summaries of all data collected during the year;
    b. An evaluation of the storm water quality;
    c. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to prevent discharge of pollutants in storm water runoff to surface water.
7. A report describing the runoff control berms constructed to direct runoff to the surface detention ponds and to prevent such runoff from entering the ephemeral streams during the 30-day holding period. The report shall include the date of construction of each berm, a map showing the location of all berms, and pictures verifying the construction.
8. If required pursuant to completion of the report specified in Provision G.1.c, a groundwater monitoring summary report including:
    a. The contents of the regular groundwater monitoring report for the last sampling event of the year;
    b. If requested by staff, tabular and graphical summaries of all data collected during the year;
    c. An evaluation of the groundwater quality beneath the site;

d. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements;

e. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and

f. The results for groundwater analyses that are performed annually.

A letter transmitting the self-monitoring reports shall accompany each report. The letter shall clearly indicate the Dischargers' name, facility or site name, county, monitoring period, and type of report (i.e., monthly, quarterly, or annual). The letter shall include a discussion of any requirement violations during the reporting period and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Dischargers have previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. Pursuant to the Standard Provisions and Reporting Requirements, the transmittal letter shall contain a statement by the Dischargers or the Dischargers' authorized agent, under penalty of perjury, that to the best of the signer's knowledge, the report is true, accurate, and complete.

The Dischargers shall implement the above monitoring program as of the date of this Order.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

_____
(Date)

Attachments Biosolids Monitoring Results form
Monthly Field Monitoring Results form
Annual Field Activities Summary form

ALO:06/08/06